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GENERAL INDEX

TO

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AND

AMERICAN RAILWAY JOURNAL,

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PREFACE.

This index includes the principal papers and articles which have appeared in *Engineering News* from the issue of the first number in 1874 to the end of the year 1890, and thus comprises a reference list to nearly all of the important works accomplished or begun, relating to civil engineering and its allied professions. The aim has been, by a critical examination of each article throughout the files, to preserve references to all those of permanent technical value, while omitting those of no present practical use. The index is by subjects, alphabetically arranged, with numerous cross references.

NEW YORK, *April 15, 1891.*

ABBREVIATIONS.

addr. address.
Am. American.
amt. amount.
anal. analysis.
ap. apparatus.
aut. automatic.
bat. battery.
b's. boilers.
bu. building.
cal. calculating, calculation.
capac. capacity.
C. E. civil engineer.
centrif. centrifugal.
chem. chemistry.
comp. compound.
condens. condensing, condensation.
cor. correspondence.
Co's. Companies.
cyl. cylinder.
dec. decrease.
dept. department.
des. designer, design.
diam. diameter.
discov. discovery.
discuss. discussion.
distrib. distribution.
dyn. dynamometer.
econ. economy, economical.
ed. editorial.
effic. efficiency.
elec. electric.
eng. engineering.
es. estimate.
estab. establishment.
evap. evaporation.
exam. examination.
excav. excavating, excavation.
exhib. exhibition.
expt. experiment.
frt. freight.
galv. galvanometer.
gov. governor.
h. house.
H. P. horse power.
hist. history.
hor. horizontal.
ht. height.
hydr. hydraulic.
illum. illuminating.
imp. improvement.
inc. increase.
incand. incandescent.
indus. industry, industrial.
ins. insurance.
Inst. Institute.

inv. inventor, invention.
locom. locomotive.
M. E. mechanical engineer.
mach. machine, machinery.
manuf. manufacture.
max. maximum.
min. minute.
mt. mountain.
munic. municipal.
mut. mutual.
n. note.
nav. navigation.
obs. observations.
pass. passenger.
pat. patent.
pneu. pneumatic.
pop. population.
por. portrait.
pro. proceedings.
proc. process.
prog. progress.
pyrom. pyrometer.
R. R. railroad.
Ry. railway.
refrig. refrigerating.
rep. report.
san. sanitary.
sec. second.
Soc. Society.
spec. specification.
sq. square.
st. street.
stat. statistics.
str. steamer.
sup. supplement.
sys. system.
teleg. telegraph.
teleph. telephone.
temp. temperature.
topog. topographical.
util. utilization.
vac. vacuum.
vel. velocity.
ventil. ventilation.
wks. works.
wrt. wrought.
wt. weight.

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NIAGARA Falls cantilever, Dec 29-**83**; traveler for Mar 1, May 17-**84**; towers replacement, Dec 10-**87**; Schneider design, Oct 6-**83**; the Niagara, hist. n Mar 12-**81.**

NORFOLK & Western, standard plans, * June 28-**88.**

NORTH river suspen., N. Y., proposed, * Jan 14, 14; with discuss. of long span bridges, Lindenthal, * Jan 28, 28, Feb 4-**88**; July 20-**89.**

OHIO Connecting R. R., floating long spans into place, inset, * Sep 20, false works for main spans, * 27-**90.**

OHIO river, of C. S. Ry., Cincin., O. * Jan 15-**81**; completion of, Jan 12-**89.**

OLD, allowable strains in, Fowler, cor. Apr 6-**89**; bk. on, T. Pope's, 1811, July 17, C. H. Parker, cor. 31-**80.**

OMAHA, Neb., 16th st. viaduct, June 13-**85**; May 22-**86.**

ORISKANY, N. Y. C. & H. R. R., inset, * Dec 7-**89.**

PASSENGER ferry, N. Y. L. Erie & W. R. R. * Apr 6, cor 20-**89.**

PENN. R. R., frt. car transfer, Jersey City, inset, * Jan 18, 18-**90**; Filbert st., Phila., extension, July 2-**81.**

PHILADELPHIA, Dec 15-**83**; Market st., monument, Oct 25-**84**; Oct 16-**86**; Chestnut st., repairs, Jan 3, strengthening, Apr 18-**85**; South st., wreck of, Feb 28, D. McN Stauffer, cor. 28-**78.**

PIERS, construction with metallic tubes, * June 24-**82**; repairing, Kan. City, Pearsons, Dec 25-**86**; stability of, * Feb 14-**80.**

PILE and trestle, Robinson, Apr 7-**88.** See also BRIDGES, railway.

PINS, and eye-bars, proportions, Stowell, Mar 31-**88**; sizes and bearings, J. A. L. Waddell, July 9-**81**; fibre strain in, J. B. Johnson, * Jan 28, DuBois, cor. Mar 10; strains in, Fowler, cor. * 24-**88.**

PITTS. and Allegheny suspen., repairing, Nov 17-**83.**

POINT, across Monongahela river, at Pittsburgh, inset, * July 8-**76**; Apr 14-**77.**

POINT Pleasant, W. Va., coffer-dams, Patton, Mar 14, May 30-**85.**

Bridges, PONTOON, railway, Lawler, June 30-**83.**
PORTABLE, Eiffel system, Apr 24-**86.**
PORTAL bracing, anal. of stresses, Cain, July 13-**89.**
POUGHKEEPSIE, over Hudson river, n Feb 26-**76**; Feb 23-**84**; Oct 15, 29-**87**; Jan 7-**88**; * Feb 16-**89.**
PROTECTOR, Locke's rerailing, * Dec 27-**90.**
QUERETARO aqueduct, Mex. * June 2-**88.**
RAILWAY. See also BRIDGES, floor and names of bridges.
AMERICAN, T. Cooper, * July 6-**89.**
CHICAGO, B. & Northern, * Apr 7, * May 5, June 9-**88.**
CHICAGO, Mil. & St. P. specs. * Jan 18-**79.**
CLEVELAND & Canton frame trestle, * Nov. 2-**89.**
DECK, wrt. iron, N. Y. C. & Northern, A. P. Boller, Dec. 13 -**79.**
DRAW-BRIDGE, Chic. Mil. & St. Paul, specs. * Jan 18-**79.**
FILBERT st., Phila., extension of Penn. R. R. July 2-**81.**
FLOORS, ballast, N. Y. P. & B. * Mar 1-**90.** See also BRIDGES, floors.
GUARD rails, Mass. Ry. Commissioners' circular, Dec 31-**87**; inside and outside, Dailey, * Jan 28, 28-**88.** See also BRIDGES, Guard.
HIGHEST viaduct in world, Loa river, Autofagasta, Ry., Bolivia, * May 18-**89.**
IRON, New Haven, Derby & Ansonia R. R., Derby, Conn., specs. May 17; N. Y. L. Erie & W., specs. (full), May 31-**79**; girder, table, Jan 29-**81.** See also names of bridges.
KANSAS C. & Om. wooden trestles, Aug 13-**87.**
LOAD diagram for stresses in asimont, * Mar 10-**88**; panel concentrations due to engine loads, P. L. Szlapka, cor. Dec 6 -**90.**
NEW Haven Derby & Ansonia R. R., Derby, Conn., specs. May 17-**79.**
NEW York, L. Erie & W., specs. (full), May 31-**79**; Starrucca viaduct, * Sep 1-**88.**
NEW York, Prov. & B. ballast floors, * Mar 1-**90.**
NORFOLK & Western standard plans, * June 23-**88.**
PENN. R. R., frt. car transfer, Jersey City, inset, * Jan 18, 18 -**90**; Filbert st., Phila., extension, July 2-**81.**
STRAINS produced by loaded cars of 90,000 lbs. capac., C. H. Blakely, cor. and ed. May 10-**90.** See also BRIDGES, strains and stresses.

Bridges, RAILWAY, TRESTLE. See TRESTLES.
TRUSS, oldest Whipple, Troy, N. Y., Del. & Hudson Canal Co. Apr 7-**83.** See also BRIDGES, truss.
VIADUCTS in world, n Oct 27-**83.** See also names of bridges.
WESTERN Union, specs. for, Jan 31, Feb 7-**78.**
WHEELING & L. Erie timber trestle, * Dec 7-**89.**
WHIPPLE truss, oldest, Troy, N. Y., Del. & Hudson Canal Co. Apr 7-**83.**
RAVI, Punjab Northern State Ry., R. T. Mallet, Oct 24-**78.**
RED river, concrete piers, Purdon, * June 2-**88.**
RED Rock cantilever, Col. river, At. & Pac. R. R., foundations, * Sep 27; J. A. L. Waddell, inset detail sheet, * Oct 4, 4, correction, 11-**90.**
RIVETED girders, A. F. Hall, * Apr 8-**82**; vs. pin connected, June 25-**87.**
RIVETING in, J. A. L. Waddell, cor. Dec 3-**82.**
ROKUGO river, Yokohama river, Japan, foundations, Feb 16-**84.**
SAFE stresses in, Ottewell, diag. * Feb 23-**89**; safety for public travel over, bill for, May 26-**77.**
ST. Charles, disaster, S. H. Yonge, Aug 21-**80.**
ST. Guistina viaduct, Southern Tyrol, inset, * Feb 1, 1-**90.**
ST. John's river, N. B., steel cantilever, Aug 9-**84**; Aug 15-**85.**
ST. Lawrence river, Lachine, Can. Pac. Ry., proposed, specs. Oct 10-**85**; Shaler Smith, Oct 1-**87.**
ST. Lèger, Val., viaduct, Paris Belt Ry. * Nov 18-**82.**
SAULT Ste. Marie, wind strains on, diags. * May 25-**89**; G. H. Massy, * Oct 18-**90.**
SCHUYLKILL river, Balt. & O. R. R. Feb 6, foundations, Mar 27 -**86.**
SIBLEY, Chic. S. Fe & Cal. * Feb 18-**88.**
SKEW portals, Apr 27, Leschorn, cor. * May 18-**89.**
SOULEUVRE viaduct, France, piers, * June 28-**90.**
SOUTH st., Phila., wreck of, Feb 28, D. McN. Stauffer, cor. 28 -**78.**
SPECIFICATIONS and building, German, Aug 6-**87.** See also BRIDGES, railway.
SPEED registering on, Mar 15-**84.**
STARRUCCA viaduct, N. Y., L. E. & W. R. R. * Sep 1-**88.**
STEEL, use of steel in construction of, June 21, T. Cooper, Sep 20, Oct 4-**79.**
STONE. See ARCHES; BRIDGES, arch, and names of bridges.

Bridges, STRAINS and stresses, stresses, cal. n May 7-**87**; strains, slide moment diag. for computing, Greiner, Apr 14-**88**; safe tresses in, Ottewell, diag. * Feb 23; strains cal. by graphical method, Baldwin, diag. * Sep 28, * Oct 12-**89**; device for cal. strains, Howe, Jan 11; mechan. comput. of stresses, R. Fletcher, * Mar 1, May 10; det. of stresses, Webb, cor. * Apr 12; strains produced by loaded cars of 90,000 lbs. capac., C. H. Blakely, cor. and ed. May 10; method of cal. strains in Whipple truss, W. Baldwin (math.), * Aug 30-**90**.

STRATH Taieri, New Zealand, Hay, July 12-**84**.

STRINGERS, max. bending moment, Bland, Feb 2-**84**.

SUKKUR, over Indus river, India, Dec 26-**85**.

SUPERSTRUCTURE, * June 28-**79**.

SUPPORT, a temporary, renewing pier of Steubenville bridge, P. C. & St. L. R. R. * July 12-**90**.

SUSPENSION, rigid, method of stiffening, Quetil, June 15-**74**; and triangular, combined, Thacher, Nov 10-**83**; early, Sep 10-**87**. See also names of bridges.

SWING, Rush st., Chicago, Aug 16-**84**.

TARDES viaduct, Montbucon Ry., France, wreck of, Sep 20-**84**.

TAY viaduct, Scot. Sep 16-**76**; disaster, Jan 3, ed. * 10- *31, cor. * Feb 7, * 21, * 28, reports, July 31, n Aug 21-**80**; new Tay, plans for, W. H. Barlow's, Dec 3-**81**; May 12-**83**; Mar 1-**84**; Aug 1, Oct 31-**85**; opening, June 25, Aug 6-**87**.

TENSAS river, M. & M. R. R., Patton, June 20-**85**.

TESTING machine. See TESTING machines.

THAMES river, London, Aug 21-**86**.

THAMES river, New London, Conn. May 19-**88**.

TIDE-water Pipe Co. suspen., Mauch Chunk, Pa. * Feb 25-**88**.

TORKHAM, India, Nov 19-**87**.

TOWER, London, * July 6-**89**.

TRESTLE. See TRESTLES.

TRUSS. See also BRIDGES, RAILWAY, truss.

ARCH, F. Gilman, Aug 16-**90**.

EXPIRED, patents on, hist. of, F. B. Brock, * Oct 28, * Nov 4-25, * Dec 2-30-**82**; Jan 6-27, Feb 17, 24, Mar 10, 24, Apr 28, May 12, 19, June 16, 23, July 7-28, Aug 4-18, Sep 1-15-**83**.

FAILURES in 1889 and for 11 years, ed. Apr 19, 19-**90**.

TRAPEZOIDAL, without counters, * May 5-**77**.

WHIPPLE, oldest, Troy, N. Y., Del. & Hudson Canal Co. Apr 7-**83**.

Bridges, TRUSSES, D. H. Morrison, cor. * Mar 31-**77**; with parallel chords, det. of strains in, R. Fletcher, * Jan 17-**78**; mechan. comput. and det. of stresses in, Fletcher, cor. * Mar 1, May 10, do Webb, cor. * Apr 12-**90**.
UPPER East river, N. Y., Blackwell's Is. n Apr 30-**81**.
VAL St. Lèger viaduct, Paris Belt Ry. * Nov 18-**82**.
VANDEVANDA, Penn. R. R. * Jan 12-**89**.
VERRUGAS viaduct, Buck, * Jan 27-**77**; * July 27-**89**.
VIADUCT. See names of bridges.
VIAUR, Du, viaduct, proposed, inset, * Nov 30, 30-**89**.
VIBRATIONS in, S. W. Robinson, rep. Dec 30-**82**.
VICTORIA viaduct, Carlisle, England, Oct 20-**77**.
VICTORIA and Montreal, July 12-**79**.
WALDLITOBEL viaduct, Arlberg, Ry. Nov 1-**84**.
WASHINGTON, over Harlem river, N. Y. city, designs, inset, * Dec 27-**90**. See also BRIDGES, New York-Manhattan.
WATERLOO, London, foundations, Mar 31-**83**.
WEIGHTS of, formulae, Mosscrop, Mar 17-**88**.
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WHIPPLE truss, oldest, Troy, N. Y., Del. & Hudson Canal Co. Apr 7-**83**; method of cal. strains in, W. Baldwin (math.), * Aug 30-**90**.
WILLEMS, Nieuwe Maas, Rotterdam, accident to a caisson, Koning, June 9-**77**.
WIND pressure on, E. J. Ward, cor. * Aug 20, C. S. Smith, and discuss., C. D. Fox, * Oct 1, 8, Ward, cor. 8; excess load due to, Wm. Cain, cor. 29-**81**; Ward, cor., diags. * Mar 4, C. B. Bender and J. Gaudard, Inst. of C. E. pro. Apr 8, Cain, cor. * May 13-**82**. See also WIND pressure.
WINNER, Kansas City, Mo., details, inset, * Mar 15, inset, * July 19, 19-**90**.
WINOOSKI river, Vt., Barbour, Mar 13-**86**.
WOODEN trestle, over Huron river, Ann Arbor, Mich., C. E. Greene, * Mar 12-**81**. See also TRESTLES.
WORLD'S great, and North river, proposed, * Jan 14-**88**.
YAZOO river, Tenn., Louis., N. Or. & Tex. R. R. Jan 20, Sept 8-**83**.
YOUGHIOGHENY, McKeesport, Pa., contract and specs. * Feb 18, 18-**82**.

British Museum, cost of, n Oct 14-**76.**
Buenos Ayres pub. works, Mar 29-**84**; notes on, Shunk, Feb 22-**90.**
Builder, the speculative, n Oct 10-**78.**
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BUILDING brick, standard, Switz., Fayod, Dec 15-**83**; do of glass sand, Nov 29-**84**; brick-work, Rankine, May 16, 16-**85.**
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CONSTRUCTION in earthquake countries, Milne, Apr 3-**86.**
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DANGEROUS, Gamble, Sep 26-**85.**
EASEMENTS, law of, n June 14-**79.**
EFFLORESCENCE and impervious mortar, Baker, Apr 7-**88.**
FLOORING, steel, Lindsay, Nov 26-**87.**
FLOORS, brick masonry beton, resistance expts. July 12-**84**; fire-proof plaster bds., H. D. Bush, cor. May 10-**90**; fire-proof construction, * Nov 9-**89**; do Haesecke, * Apr 12-**90**; do cost, etc. * Apr 19-**90**; the Schneider fire-proof, * Feb 8-**90.**
FOUNDATIONS, new, under Columbia Elevator, Prov., R. I., Hawks, * Feb 25-**88**; for columns, Inter-state Rap. Tran. Ry. * Apr 21-**88.**
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STONES, wts, spec. grav., absorption and heat withstanding power of, H. A. Cutting, table, Nov 27-**80**; strength of Dec 3-**81**; use of, Gowans, Mar 24, decay of, Dec 15-**83**; do of Chicago, Jenny, Jan 5-**84.** See also STONE.
TRADES, condition of (prices for labor), July 23-**81.**
UNDERMINED ground, building on, F. Heinzerling, Sep 6-**79.**
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BRIGHTON beach hotel, Coney Is., moving of, April 7-**88.**
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CHURCH of Sacred Heart, Montmartre, Paris, foundations, May 9-**85.**
COUNTY court house, Cook co., N. Y., measurement of work on, Dec 8-**77.**

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FULTON market, N. Y. city, new building, Nov 19-**81.**
HIGH, in cities, ed. Jan 19-**89.**
HOUSES, damp, July 14-**77.** See also HOUSE; SANITARY eng.
MONMOUTH Park Assoc., N. J., grand stand, * Jan 18, inset, Mar 29, 29-**90.**
NEW York Mut. Life, hoisting and heating plant, Aug 2-**84.**
POST Office, fall of a portion of roof, Mar 12, 19-**77.**
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PARIS opera house, new, foundations of, Baude, n July 22-**76.**
PONCE de Leon hotel, Fla., concrete construction, * Mar 16-**89.**
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ST. Augustine, Fla., concrete construction, Ponce de Leon, etc. * Mar 16 -**89.**
ST. Peters, Rome, hooping of dome, May 16-**85.**
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Cable railways. See RAILWAYS, cable.
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BUILDER, De Lesseps, June 6-**85.**
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NEW York state, rep. Pub. works, Jan 21-**82**; and West Shore R. R. Dec 22-**83.**
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NICARAGUA ship, commission, rep. Jan 6-**77**; May 15-**86**; surveys, June 16, ed. and n 30, Menocal, * July 7, 14, and ed. 14; Peary and Hueston, Aug 18, 18-**88**; map and inset, * Sep 14, 14-**89.**
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Cements, SUGAR, effect of, H. Porter, Dec 24-**87.**
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DORCHESTER Bay, shaft sinking under difficulties, D. McN. Stauffer, inset, * Jan 14-**84.**

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Tunnels, ST. Gothard, Switz., D. K. Clark, Feb 5, 12-**76**; Sep 26-**78**; completion of, * June 5; contract, Dec 18-**80**; (full account), Nov 19-**81**; opening, June 24; and Ry. * Aug 5 -**82**; circular tunnels, etc. Nov 10-**83**; Pfaffensprung, Brandt rock drill in, Feb 9-**84**; contract, July 11-**85**; temp. observations in, Nov 1-**90**.

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SIMPLON, Switz., proposed, n Oct 29-**81**; June 2-**83**; Mar 8 -**84**; proposed, July 2-**87**; temperatures, projected, * Nov 1 -**90**.

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TRURO, N. S., Croes, June 24-**82**.
TUNKHANNOCK, Pa., Croes, June 17-**82**.
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Water-works, URBANA, O., Croes, Feb 4-**82**.
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VALLEJO, Cal., Croes, Feb 25-**82**.
VANCOUVER, B. Croes, Feb 2-**89**.
VANCOUVER, W. T., Croes, Apr 8-**82**.
VIRGINIA City, Nev., n Oct 15-**75**; Gold Hill and Silver City, Croes, May 13-**82**.
VIRGINIA, University of, Croes, Jan 28-**82**.
WACO, Texas, Croes, July 29-**82**.
WALLA Walla, W. T., Croes, Dec 16-**82**.
WALTHAM, Mass., Croes, Dec 17-**81**.
WALTON, N. Y., Croes, Dec 9-**82**.
WARSAW, N. Y., Croes, Feb 4-**82**.
WARWICK, N. Y., Croes, June 17-**82**.
WASHINGTON, D. C., aqueduct, Feb 14-**85**; Sep 18-**86**.
WATERBURY, Conn., Croes, Aug 20-**81**.
WATERTOWN, N. Y., Croes, Apr 22-**82**.
WAUKEGAN, Ill., Croes, Jan 28-**82**.
WAVERLY, N. Y., Croes, Feb 18-**82**.
WELLESLEY, Mass., Fuller, rep. Oct 10-**85**.
WELLSVILLE, O., Croes, Nov 18-**82**.
WEST, of far west, ed. Apr 20-**89**.
WESTBOROUGH, Mass., Croes, July 1-**82**.
WESTCHESTER, Pa., Croes, July 8-**82**.
WESTERN N. C. Insane Asylum, Croes, Dec 16-**82**.
WESTFIELD, Mass., Croes, Apr 1-**82**.
WEST Springfield, Mass., Croes, Oct 28-**82**.
WEST Troy, N. Y., Croes, Mar 18-**82**.
WHEELING, W. Va., Croes, Dec 2-**82**.
WILKESBARRE, Pa., Croes, Nov 26-**81**.
WILLIAMSPORT, Pa., Croes, July 30-**81**.
WILMINGTON, Del., Croes, Sep 17-**81**.
WILMINGTON, N. C., Croes, July 1-**82**.
WINCHESTER, Mass., Croes, July 15-**82**.
WINGHAM, Can., Croes, Feb 25-**82**.
WINNEMNECA, Nev., Croes, July 29-**82**.
WINONA, Minn., Croes, June 17-**82**.
WINSOR, N. S., rep. Nov 12-**81**.
WINSTED, Conn., Croes, Dec 17-**81**.
WOBURN, Mass., Croes, May 13-**82**.
WOOSTER, O., Croes, June 17-**82**.

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YOKOHAMA, Aug 14-**86**.
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YOUNGSTOWN, O., Croes, Dec 23-**82**.
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YREKA, Cal., Croes, Apr 1-**82**.
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